# Quoc-Viet Pham

## Personal Data


| | |
|---|---|
| Place and Date of Birth: | Hai Duong, Vietnam \| 05 April 1990 |
| Address: | 310-2, ABC Center, Pusan National University, Yangsan Campus, 50612 Korea |
| Phone: | +82-10-2158-5224 |
| Skype: | vietpq90@hotmail.com |
| Email: | vietpq@pusan.ac.kr / vietpq@ieee.org / vietpq90@gmail.com |
| Personal Site: | https://sites.google.com/view/vietpq90 |
| Profiles: | Google Scholar, ResearchGate, Publons, Scopus, LinkedIn, and ORCID |


## Education

Aug. 2017 — Doctor of Engineering in Telecommunications, **Inje University**, Kimhae, Korea
Thesis: "Fair and Energy-Efficient Resource Allocation Optimization in Wireless Networks"
Advisor: Prof. Won-Joo Hwang
GPA: 4.39/4.50
Prize: Best Ph.D. Dissertation, Ranking #1 in Engineering

Aug. 2015 — Master of Science in Telecommunications, **Inje University**, Kimhae, Korea
Thesis: "Multi-Timescale Cross-Layer Design in Wireless Multihop Networks"
Advisor: Prof. Won-Joo Hwang
GPA: 4.50/4.50

Aug. 2013 — Bachelor of Science in Electronics and Telecommunications,
**Hanoi University of Science and Technology**, Hanoi, Vietnam
Thesis: "Building an Observational Data Processing and Archiving Center for Automatic Water Level Gathering and Alarming System" (in Vietnamese)
Advisor: Prof. Van-Duc Nguyen
GPA: 3.08/4.00

## Work Experience

Jan. 2020 - Current — Research Professor,
Korean Southeast Center for the 4th Industrial Revolution Leader Education,
Pusan National University, Korea

Mar. 2018 - Dec. 2019 — Research Professor,
ICT Convergence Center, Changwon National University/Inje University, Korea

Sep. 2017 - Feb. 2018 — Post-Doctoral Research Fellow,
Dept. Computer Science and Engineering, Kyung Hee University, Korea

Sep. 2013 - Jun. 2017 — Research Assistant, Wireless Networks (WINE) laboratory,
Dept. Information and Communication System, Inje University, Korea

## Visiting Experience

Jan. 2016- Feb. 2016 — Tokyo University of Science, Japan, Prof. Mikio Hasegawa

Aug. 2019 - Aug. 2019 — Tokyo University of Science, Japan, Prof. Mikio Hasegawa

## Grants and Projects

2019 - 2024 **NRF Basic Science and Research** (500,000,000 KRW), Principal Investigator
Grant NRF-2019R1C1C1006143
Title: *Privacy Enhancing Connected Cars in 5G and Beyond*

2022 - 2024 **FDCRGP Grant** ($136,000, 3 years)
Co-Principal Investigator
Title: *Edge-assisted Activity Recognition using Skeletal Representation and DL for Video Surveillance*

2019 - 2022 **NRF Basic Science and Research** (100,000,000 KRW/year, up to 5 years)
Key Participant, Grant NRF-2019R1I1A3A01060518
Title: *Edge Computing in the 5G Ecosystem: Joint 4C Framework and Its Applications*

2018 - 2019 **NRF Basic Science and Research** (25,000,000 KRW), Key Participant
Project in collaboration with the Australian side (Grant NRF-2018K2A9A1A01090540)
Title: *Low Overhead Channel Access for 5G Mobile Communications in Large-Scale IoT Networks*

2020 - 2027 **Brain Korea (BK) 21** (549,825,000 KRW/year), Participant
Korean Southeast Center for the 4th Industrial Revolution Leader Education,
Pusan National University

## Awards and Recognition

- BKACAD certificate of CCNA course, 2012.
- University scholarship for excellent students, HUST, 2010-2013.
- Prize for excellent students, Vietnamese Students' Association in Korea (VSAK), 2015.
- Best paper award, KMMS 2014, JKCCS 2016, KJCCS 2020, KICS 2021.
- Leadership and scientific publication scholarship, Inje University, 2015-2016.
- Best Ph.D. dissertation, Inje University, Spring 2017.
- Top reviewer award, IEEE Transactions on Vehicular Technology, 2020.
- Top 2% of scientists on Stanford University list, 2021.
- Award for outstanding contributions and research excellence, Minister of Education (Korea), 2021.
- Golden globe award 2021 for Vietnamese young scientists, Ministry of Science and Technology, 2021.

## Mentoring and Teaching Experience

**Teaching Courses**, Inje University

1. Network Optimization
2. Game Theory
3. Machine Learning in Wireless and Communication Networks

**Teaching assistant**, Inje University

1. Introduction to Android Programming, Fall semester 2016.
2. Data and Computer Communications, 2016-2017 (3 semesters).

**Mentoring assistant**, Hanoi University of Science and Technology

1. Project II (a course for 4th-year undergraduate student), Fall 2012.

## Supervision

### Doctoral Students

- Le Thi Mai [PNU, 2021/3-Present] - *Topic*: Wireless AI and aerial access networks.
- Nguyen Minh Duong [PNU, 2020/9-Present] - *Topic*: DRL for 6G resource optimization
- Swe Swe Latt [PNU, 2020/9-Present] - *Topic*: federated learning and 6G resource optimization
- Dao Thien Thanh [PNU, 2020/9-Present] - *Topic*: deep learning and depth map
- Nadia Iradukunda [Inje University, 2019/9-Present] - *Topic*: UAV communications in 5G and beyond

### Master Students

- Daeil Noh [PNU, 2020/9-Present] - *Topic*: Deep learning for amateur UAV recognition
- Sang Min Lee [PNU, 2020/9-Present] - *Topic*: Communication-efficient federated learning

### Alumnus

- Le Thi Mai [MS, Inje University, 2019/3-2021/2] - *Topic*: swarm intelligence for D2D communications
- Hoang Huu Trung [Ph.D., Inje University, 2018/9-2021/2] - *Topic*: ML for mmWave communications
- Vo Ta Hoang [Ph.D., Inje University, 2017/9-2020/2] - *Topic*: resource allocation for MEC systems
- Nguyen Tien Hoang [MS, Inje University, 2017/9-2019/8] - *Topic*: coalitional games for NOMA-MEC
- Maurice Nduwayezu [MS, Inje University, 2017/9-2019/8] - *Topic*: DRL for NOMA-MEC offloading
- Girmay Gebremariam [MS, Inje University, 2017/9-2019/8] - *Topic*: swarm intelligence for D2D communications with unlicensed spectrum
- Akmal Azizan [MS, Inje University, 2017/9-2019/8] - *Topic*: blockchain for healthcare applications

## Professional Activities

**Editors**

- Journal of Network and Computer Applications [Elsevier, Q1, IF 6.281, 2020-Present]
- IEEE Internet of Things Journal [Lead Guest Editor, Aerial Computing for the Internet-of-Things (IoT), 2021-2022]
- Frontiers in Communications and Networks [Associate Editor, 2020-Present]
- Frontiers in Communications and Networks [Guest Editor, Communication Efficient Edge Learning for Unmanned Aerial Vehicle Networks, 2021]
- Sensors [Guest Editor, Security and Privacy in the Internet of Things (IoT), 2021]

**Invited Referee for Journals**

- **Letters**: IEEE COMML, IEEE WCL.
- **Transactions**: IEEE TCOM, IEEE TWC, IEEE TVT, IEEE TMC, IEEE TSC, IEEE TPDS, IEEE TCSS, IEEE JSAC, IEEE TGCN, IEEE TSIPN, IEEE IoTJ.
- **Magazines**: IEEE CommMag, IEEE WCM, IEEE CSM, IEEE VTM, IEEE CIM.
- **Other Journals**: ACM CSUR, IEEE SJ, IEEE Access, ComNet, ETT, EURASIP JWCN, IJDSN, Sensors.

**Technical Program Committee**

- **2022**: IEEE ICC
- **2021**: IEEE VTC2021-Fall, IEEE ISC2, EAI Qshine, FICTA, IEEE GLOBECOM.
- **2020**: ICCIS, IEEE WCNC, IEEE ICC, IEEE VTC2020-Spring, IEEE STP-CPS-SECON.

**TPC Chair/Track Chair**

- **2022**: EAI GameNets 2022 (10th EAI International Conference on Game Theory for Networks), ICIT 2022 (The First International Conference on Intelligence of Things)
- **2021**: SoICT (11th International Symposium on Information and Communication Technology)

**Administrator**

- telecom-vn: 127.0.0.1 of Vietnamese Telecomian Community

## Fields of Research Interest

- Edge computing and edge learning
- Wireless AI and resource optimization
- AI and ML for future network systems

## Publications

### Books

[1] C. de Alwis, **Q.-V. Pham**, P. Kumar, and M. Liyanage, *6G Frontiers: New Technologies, Applications, and Standardization Approaches*, Wiley-IEEE Press, expected 2022 (book proposal approved).

### Book Chapters

[1] N.-N. Dao, Dinh NT, **Q.-V. Pham**, Phan TV, Cho S, and Braun T, "Vulnerabilities in Fog/Edge Computing from Architectural Perspectives," Chapter 11, in *Fog/Edge Computing For Security, Privacy, and Applications*, Wu J and Chang W, Springer, 2021 [Eds].

[2] **Q.-V. Pham**, D. C. Nguyen, T. Huynh-The, W.-J. Hwang, and P. N. Pathirana, "Artificial Intelligence and Big Data for COVID-19 and Social Distancing," Chapter 5, in *Enabling Technologies for Social Distancing: Fundamentals, concepts and solutions*, IET, expected 2022 [Eds].

[3] D. C. Nguyen, **Q.-V. Pham**, M. Ding, P. N. Pathirana, and A. Seneviratne, "Security and Privacy and Blockchain Applications in COVID-19 Detection and Social Distancing," Chapter 7, in *Enabling Technologies for Social Distancing: Fundamentals, concepts and solutions*, IET, expected 2022 [Eds].

### Preprints and Under Review

[1] P. K. R. Maddikunta, **Q.-V. Pham**, D. C. Nguyen, T. Huynh-The, O. Aouedi, G. Yenduri, and T. R. Gadekallu, "Incentive Techniques for the Internet of Things: A Survey," under review, *IEEE Communications Surveys and Tutorials*.

[2] T.-H. Vu, T.-V. Nguyen, **Q.-V. Pham**, D. B. da Costa, and S. Kim, "UAV-Aided Short-Packet NOMA Networks with Imperfect CSI and SIC," under review, *IEEE Internet of Things Journal*.

[3] Y. M. Saputra, D. N. Nguyen, H. T. Dinh, **Q.-V. Pham**, E. Dutkiewicz, and W.-J. Hwang, "Federated Learning Framework with Straggling Mitigation and Privacy-Awareness for AI-based Mobile Application Services," under review, *IEEE Transactions on Mobile Computing*.

[4] **Q.-V. Pham**, R. Ruby, F. Fang, D. C. Nguyen, Z. Yang, M. Le, Z. Ding, and W.-J. Hwang, "Aerial Computing: A New Computing Paradigm, Applications, and Challenges," under review, *IEEE Internet of Things Journal*.

[5] H. Dang-Ngoc, D. N. Nguyen, K. Ho-Van, H. T. Dinh, E. Dutkiewicz, **Q.-V. Pham**, and W.-J. Hwang, "Secure Swarm UAV-assisted Communications with Cooperative Friendly Jamming," under review, *IEEE Internet of Things Journal*.

[6] T. Huynh-The, T.-V. Nguyen, **Q.-V. Pham**, D. B. da Costa, and D.-S. Kim, "MIMO-OFDM Modulation Classification Using Three-Dimensional Convolutional Network," under revision, *IEEE Transactions on Vehicular Technology*.

[7] M.-D. Nguyen, S.-M. Lee, **Q.-V. Pham**, H. T. Dinh, D. N. Nguyen, and W.-J. Hwang, "HCFL: A High Compression Approach for Communication-Efficient Federated Learning in Very Large-Scale IoT Networks," under revision, *IEEE Transactions on Mobile Computing*.

[8] **Q.-V. Pham**, M. Le, T. Huynh-The, Z. Han, and W.-J. Hwang, "Energy-Efficient Federated Learning over UAV-enabled Wireless Powered Communications," under revision, *IEEE Transactions on Vehicular Technology*.

[9] T. Huynh-The, T.-V. Nguyen, **Q.-V. Pham**, V.-S. Doan, D. B. da Costa, and D.-S. Kim, "Efficient Convolutional Networks for Robust Automatic Modulation Classification in OFDM-Based Wireless Systems," under review, *IEEE Systems Journals*.

[10] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, D. B. da Costa, and D.-S. Kim, "High-Performance Convolutional Network for RF-Based Drone Surveillance," under review, *IEEE Systems Journals*.

[11] A. Samanta, **Q.-V. Pham**, D.-T. Do, N.-N. Dao, A. Muthanna, and S. Cho, "mISO: Incentivizing Demand-Agnostic Microservices for Edge Computing in Mobile IoT Networks," under major revision, *IEEE Internet of Things Journal*.

[12] T. R. Gadekallu, **Q.-V. Pham**, T. Huynh-The, S. Bhattacharya, P. K. R. Maddikunta, and M. Liyanage, "Federated Learning for Big Data: A Survey on Opportunities, Applications, and Future Directions," under review, *ACM Computing Surveys*.

[13] C. T. Nguyen, N. V. Huynh, N. H. Chu, Y. M. Saputra, H. T. Dinh, D. N. Nguyen, **Q.-V. Pham**, D. Niyato, E. Dutkiewicz, and W.-J. Hwang, "Transfer Learning for Wireless Networks: A Comprehensive Survey" under review, *Proceedings of the IEEE*.

[14] M. Zeng, E. Bedeer, X. Li, **Q.-V. Pham**, O. A. Dobre, P. Fortier, and L. A. Rusch, "IRS-Empowered Wireless Communications: State-of-the-Art, Key Techniques, and Open Issues," under review, *IEEE Network*.

[15] **Q.-V. Pham**, M. Zeng, T. Huynh-The, Z. Han, and W.-J. Hwang, "Aerial Access Networks for Federated Learning: Applications and Challenges," under minor revision, *IEEE Network*.

[16] Parimala M, Swarna Priya R M, **Q.-V. Pham**, K. Dev, P. K. R. Maddikunta, T. R. Gadekallu, and T. Huynh-The, "Fusion of Federated Learning and Industrial Internet of Things: A Survey," under review, *Future Generation Computer Systems*.

[17] Prabadevi B, **Q.-V. Pham**, M. Liyanage, N Deepa, Mounik VVSS, S. Reddy, P. K. R. Maddikunta, N. Khare, T. R. Gadekallu, and W.-J. Hwang, "Deep Learning for Intelligent Demand Response and Smart Grids: A Comprehensive Survey," under review, *Computer Science Review*.

[18] N. Deepa, **Q.-V. Pham**, D. C. Nguyen, S. Bhattacharya, Prabadevi B, T. R. Gadekallu, P. K. R. Maddikunta, F. Fang, and P. N. Pathirana, "A Survey on Blockchain for Big Data: Approaches, Opportunities, and Future Directions," under major revision, *Future Generation Computer Systems*.

[19] T. R. Gadekallu, **Q.-V. Pham**, T. Huynh-The, S. Bhattacharya, P. K. R. Maddikunta, and M. Liyanage, "Federated Learning for Big Data: A Survey on Opportunities, Applications, and Future Directions," under review, *ACM Computing Surveys*.

[20] M. Alazab, R. Vinayakumar, S. Srinivasan, **Q.-V. Pham**, S. Venkatraman, Soman KP, and K. Simran, "Deep Learning for Cyber Security Applications: A Comprehensive Survey," under revision, *IEEE Communications Surveys and Tutorials*.

## Journal Articles

[1] M. Le, **Q.-V. Pham**, H.-C. Kim, and W.-J. Hwang, "Enhanced Resource Allocation in D2D Communications with NOMA and Unlicensed Spectrum," *IEEE Systems Journal*, in press.

[2] Q. V. Do, **Q.-V. Pham**, and W.-J. Hwang, "Deep Reinforcement Learning for Energy-Efficient Federated Learning in UAV-Enabled Wireless Powered Networks," *IEEE Communications Letters*, in press.

[3] B. M. ElHalawany, E. M. Mohamed, **Q.-V. Pham**, K. Wu, and AAA El-Banna, "Spectrum Sharing in Cognitive-Radio Inspired NOMA Systems under Imperfect SIC and Co-Channel Interference," *IEEE Systems Journal*, in press.

[4] H. Ta, **Q-V. Pham**, K. Ho-Van, and S. W. Kim, "Covert communication with noise and channel uncertainties," *Wireless Networks*, in press.

[5] D. C. Nguyen, **Q.-V. Pham**, P. N. Pathirana, M. Ding, A. Seneviratne, J. Lin, O. A. Dobre, and W.-J. Hwang, "Federated Learning for Smart Healthcare: A Survey," *ACM Computing Surveys*, in press.

[6] M. Alazab, Swarna Priya RM, Parimala M, P. K. R. Maddikunta, T. R. Gadekallu, and Q.-V. Pham, "Federated Learning for Cybersecurity: Concepts, Challenges and Future Directions," *IEEE Transactions on Industrial Informatics*, in press.

[7] W. Wang, F. H. Memon, Z. Lian, H. Xu, T. R. Gadekallu, **Q.-V. Pham**, K. Dev, and C. Su, "Secure-Enhanced Federated Learning for AI-Empowered Electric Vehicle Energy Prediction," *IEEE Consumer Electronics Magazine*, in press.

[8] R. Ruby, **Q.-V. Pham**, K. Wu, A. A. Heidari, H. Chen, and B. M. ElHalawany, "Enhancing Secrecy Performance of Cooperative NOMA-based IoT Networks via Multi-Antenna Aided Artificial Noise," *IEEE Internet of Things Journal*, in press.

[9] H. Yang, R. Ruby, **Q.-V. Pham**, and K. Wu, "Aiding a Disaster Spot via Multi-UAV-based IoT Networks: Energy and Mission Completion Time-Aware Trajectory Optimization," *IEEE Internet of Things Journal*, in press.

[10] P. K. R. Maddikunta, **Q.-V. Pham**, Prabadevi B, N Deepa, K. Dev, T. R. Gadekallu, R. Ruby, and M. Liyanage, "Industry 5.0: A Survey on Enabling Technologies and Potential Applications," *Journal of Industrial Information Integration*, in press.

[11] T. R. Gadekallu, **Q.-V. Pham**, D. C. Nguyen, P. K. R. Maddikunta, N Deepa, Prabadevi B, P. N. Pathirana, J. Zhao, and W.-J. Hwang, "Blockchain for Edge of Things: Applications, Opportunities, and Challenges," *IEEE Internet of Things Journal*, vol. 9, no. 2, pp. 964-988, Jan. 2022.

[12] S. Ramasubbareddy, S. Ramasamy, K. S. Sahoo, R. L. Kumar, **Q.-V. Pham**, and N.-N. Dao, "CAVMS: Application-Aware Cloudlet Adaption and VM Selection Framework for Multi-Cloudlet Environment," *IEEE Systems Journal*, vol. 15, no. 4, pp. 5098-5106, Dec. 2021.

[13] L. Nkenyereye, L. Nkenyereye, **Q.-V. Pham**, and J. S. Song, "Efficient RSU Selection Scheme for Fog-based Software-Defined Vehicular Network," *IEEE Transactions on Vehicular Technology*, vol. 70, no. 11, pp. 12126-12141, Nov. 2021.

[14] H. Han, J. Zhao, W. Zhai, Z. Xiong, D. Niyato, M. D. Renzo, **Q.-V. Pham**, W. Lu, and K.-Y. Lam, "Reconfigurable Intelligent Surface Aided Power Control for Physical-Layer Broadcasting," *IEEE Transactions on Communications*, vol. 69, no. 11, pp. 7821-7836, Nov. 2021.

[15] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, T. T. Nguyen, R. Ruby, M. Zeng, and D.-S. Kim, "Automatic Modulation Classification: A Deep Architecture Survey," *IEEE Access*, vol. 9, pp. 142950-142971, Oct. 2021.

[16] **Q.-V. Pham**, D. C. Nguyen, S. Mirjalili, H. T. Dinh, D. N. Nguyen, P. N. Pathirana, and W.-J. Hwang, "Swarm Intelligence for Next-Generation Networks: Recent Advances and Applications," *Journal of Network and Computer Applications*, vol. 191, pp. 103141, Oct. 2021.

[17] T. Huynh-The, C.-H. Hua, V.-S. Doan, **Q.-V. Pham**, and D.-S. Kim, "Accurate Deep CNN-based Waveform Recognition for Intelligent Radar Systems," *IEEE Communications Letters*, vol. 25, no. 9, pp. 2938-2942, Sep. 2021.

[18] D. C. Nguyen, M. Ding, **Q.-V. Pham**, P. N. Pathirana, L. B. Le, A. Seneviratne, J. Li, D. Niyato, and H. V. Poor, "Federated Learning Meets Blockchain in Edge Computing: Opportunities and Challenges," *IEEE Internet of Things Journal*, vol. 8, no. 16, pp. 12806-12825, Aug. 2021.

[19] P. K. R. Maddikunta, S. Hakak, M. Alazab, S. Bhattacharya, T. R. Gadekallu, W. Z. Khan, and **Q.-V. Pham**, "Unmanned Aerial Vehicles in Smart Agriculture: Applications, Requirements and Challenges," *IEEE Sensors Journal*, vol. 21, no. 6, pp. 17608-17619, Aug. 2021.

[20] T. Huynh-The, V.-S. Doan, C.-H. Hua, **Q.-V. Pham**, T.-V. Nguyen, and D.-S. Kim, "Accurate LPI Radar Waveform Recognition with CWD-TFA for Deep Convolutional Network," *IEEE Wireless Communications Letters*, vol. 10, no. 8, pp. 1638-1642, Aug. 2021.

[21] L. Nkenyereye, J. Y. Hwang, **Q.-V. Pham**, and J. S. Song, "Virtual IoT Service Slice Functions for Multi-Access Edge Computing Platform," *IEEE Internet of Things Journal*, vol. 8, no. 14, pp. 11233-11248, Jul. 2021.

[22] **Q.-V. Pham**, N. T. Nguyen, T. Huynh-The, L. B. Le, K. Lee, and W.-J. Hwang, "Intelligent Radio Signal Processing: A Survey," *IEEE Access*, vol. 9, pp. 83818-83850, 2021.

[23] Prabadevi B, N Deepa, **Q.-V. Pham**, D. C. Nguyen, P. K. R. Maddikunta, T. R. Gadekallu, P. N. Pathirana, and O. Dobre, "Toward Blockchain for Edge-of-Things: A New Paradigm, Opportunities, and Future Directions," *IEEE Internet of Things Magazine*, vol. 4, no. 2, pp. 102-108, Jun. 2021.

[24] L. Nkenyereye, J. Y. Hwang, **Q.-V. Pham**, and J. S. Song, "MEIX: Evolving Multi-Access Edge Computing for Industrial Internet-of-Things Services," *IEEE Network*, vol. 35, no. 3, pp. 147-153, May/Jun. 2021.

[25] M. Zeng, E. B. Mohamed, O. A. Dobre, P. Fortier, **Q.-V. Pham**, and W. Hao, "Energy-Efficient Resource Allocation for IRS-Assisted Multi-Antenna Uplink Systems," *IEEE Wireless Communications Letters*, vol. 10, no. 6, pp. 1261-1265, Jun. 2021.

[26] **Q.-V. Pham**, N. Iradukunda, Nguyen H. Tran, W.-J. Hwang, and S.-W. Chung, "Joint Placement, Power Control, and Spectrum Allocation for UAV Wireless Backhaul Networks," *IEEE Networking Letters*, vol. 3, no. 2, pp. 56-60, Jun. 2021.

[27] N.-N. Dao, **Q.-V. Pham**, N. H. Tu, T. T. Thanh, V. N. Q. Bao, D. S. Lakew, and S. Cho, "Survey on Aerial Radio Access Networks: Toward a Comprehensive 6G Access Infrastructure," *IEEE Communications Surveys and Tutorials*, vol. 23, no. 2, pp. 1193-1225, Second Quarter 2021.

[28] **Q.-V. Pham**, M. Zeng, R. Ruby, T. Huynh-The, and W.-J. Hwang, "UAV Communications for Sustainable Federated Learning," *IEEE Transactions on Vehicular Technology*, vol. 70, no. 4, pp. 3944-3948, Apr. 2021.

[29] C. de Alwis, A. Kalla, **Q.-V. Pham**, P. Kumar, K. Dev, W.-J. Hwang, and M. Liyanage, "Survey on 6G Frontiers: Trends, Applications, Requirements, Technologies and Future Research," *IEEE Open Journal of the Communications Society*, vol. 2, pp. 836-886, Apr. 2021.

[30] N.-N. Dao, **Q.-V. Pham**, D.-T. Do, S. Dustdar, "The Sky is the Edge—Toward Mobile Coverage from the Sky," *IEEE Internet Computing*, vol. 25, no. 2, pp. 101-108, Mar.-Apr. 2021.

[31] N. Iradukunda, **Q.-V. Pham**, M. Zeng, H.-C. Kim, and W.-J. Hwang, "UAV-enabled Wireless Backhaul Networks using Non-Orthogonal Multiple Access," *IEEE Access*, vol. 9, pp. 36689-36698, Jan. 2021.

[32] F. Figueiredo, M. Facina, R. Ferreira, R. Ruby, **Q.-V. Pham**, and G. Fraidenraich, "Large Intelligent Surfaces with Discrete Set of Phase-Shifts Communicating Through Double-Rayleigh Fading Channels," *IEEE Access*, vol. 9, pp. 20768-20787, Jan. 2021.

[33] Luan N. T. Huynh, **Q.-V. Pham**, T.D.T. Nguyen, M.D. Hossain, Y.-R. Shin, and E.-N. Huh, "Joint Computational Offloading and Data-Content Caching in NOMA-MEC Networks," *IEEE Access*, vol. 9, pp. 12943-12954, Jan. 2021.

[34] T.-T. Nguyen, V.-D. Nguyen, **Q.-V. Pham**, and J.-H. Lee, and Y.-H. Kim, "Resource Allocation for AF Relaying Wireless-powered Networks with Nonlinear Energy Harvester," *IEEE Communications Letters*, vol. 25, no. 1, pp. 229-233, Jan. 2021.

[35] J. Tu, H. Chen, J. Liu, A. A. Heidari, X. Zhang, M. Wang, R. Ruby, and **Q.-V. Pham**, "Evolutionary Biogeography-based Whale Optimization Methods with Communication Structure: Towards Measuring the Balance," *Knowledge-based Systems*, vol. 212, pp. 106642, Jan. 2021.

[36] M. J. Piran, **Q.-V. Pham**, S. M. Riazul Islam, S. Cho, B. Bae, D.-Y. Suh, and Z. Han, "Multimedia Communication over Cognitive Radio Networks from QoS/QoE Perspective: A Comprehensive Survey," *Journal of Network and Computer Applications*, vol. 172, no. 10, pp. 102759, Dec. 2020.

[37] T.-T. Nguyen, **Q.-V. Pham**, V.-D. Nguyen, J.-H. Lee, and Y.-H. Kim, "Resource Allocation for Energy Efficiency in OFDMA-Enabled WPCN," *IEEE Wireless Communications Letters*, vol. 9, no. 12, pp. 2049-2053, Dec. 2020.

[38] F. Fang, Y. Xu, **Q.-V. Pham**, and Z. Ding, "Energy-Efficient Design of IRS-NOMA Networks," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 11, pp. 14088-14092, Nov. 2020.

[39] Huong-Giang T. Pham, **Q.-V. Pham**, Anh T. Pham, and Chuyen T. Nguyen, "Joint Task Offloading and Resource Management in NOMA-based MEC Systems: A Swarm Intelligence Approach," *IEEE Access*, vol. 8, pp. 190463-190474, Oct. 2020.

[40] **Q.-V. Pham**, T. Huynh-The, M. Alazab, J. Zhao, and W.-J. Hwang, "Sum-Rate Maximization for UAV-assisted Visible Light Communications using NOMA: Swarm Intelligence meets Machine Learning," *IEEE Internet of Things Journal*, vol. 7, no. 10, pp. 10375-10387, Oct. 2020.

[41] **Q.-V. Pham**, D. C. Nguyen, T. Huynh-The, W.-J. Hwang, and P. N. Pathirana, "Artificial Intelligence (AI) and Big Data for Coronavirus (COVID-19) Pandemic: A Survey on the State-of-the-Arts," *IEEE Access*, vol. 8, pp. 130820 -130839, Jul. 2020.

[42] R. Vinayakumar, M. Alazab, S. Srinivasan, **Q.-V. Pham**, S. K. Padannayil, and K. Simran, "A Visualized Botnet Detection System based Deep Learning for the Internet of Things Networks of Smart Cities," *IEEE Transactions on Industry Applications*, vol. 56, no. 4, pp. 4436-4456, Jul.-Aug. 2020.

[43] **Q.-V. Pham**, F. Fang, V. N. Ha, M. J. Piran, M. Le, L. B. Le, W.-J. Hwang, and Z. Ding, "A Survey of Multi-Access Edge Computing in 5G and Beyond: Fundamentals, Technology Integration, and State-of-the-Art," *IEEE Access*, vol. 8, pp. 116974-117017, Jun. 2020.

[44] N. Maurice, **Q.-V. Pham**, and W.-J. Hwang, "Online Computation Offloading in NOMA-based Multi-Access Edge Computing: A Deep Reinforcement Learning Approach," *IEEE Access*, vol. 8, pp. 99098-99109, May 2020.

[45] **Q.-V. Pham**, S. Mirjalili, N. Kumar, M. Alazab, and W.-J. Hwang, "Whale Optimization Algorithm with Applications to Resource Allocation in Wireless Networks," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 4, pp. 4285-4297, Apr. 2020.

[46] T. Huynh-The, C.-H. Hua, **Q.-V. Pham**, and D.-S. Kim, "MCNet: An Efficient CNN Architecture for Robust Automatic Modulation Classification," *IEEE Communications Letters*, vol. 24, no. 4, pp. 811-815, Apr. 2020.

[47] **Q.-V. Pham**, Hoang T. Nguyen, Z. Han, and W.-J. Hwang, "Coalitional Games for Computation Offloading in NOMA-Enabled Multi-Access Edge Computing," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 2, pp. 1982-1993, Feb. 2020.

[48] G. G. Girmay, **Q.-V. Pham**, and W.-J. Hwang, "Joint Channel and Power Allocation for D2D on Licensed and Unlicensed Band," *IEEE Access*, vol. 7, pp. 22196-22205, Feb. 2019.

[49] **Q.-V. Pham**, L. B. Le, S.-H. Chung, and W.-J. Hwang, "Mobile Edge Computing with Wireless Backhaul: Joint Task Offloading and Computation Resource," *IEEE Access*, vol. 7, pp. 16444-16459, Jan. 2019.

[50] **Q.-V. Pham**, T. LeAnh, N. H. Tran, B. Ju Park, and C. S. Hong, "Decentralized Computation Offloading and Resource Allocation for Mobile-Edge Computing: A Matching Game Approach," *IEEE Access*, vol. 6, pp. 75 868–75 885, Nov. 2018.

[51] **Q.-V. Pham** and W.-J. Hwang, "Energy-Efficient Power Control for Uplink Spectrum-Sharing Heterogeneous Networks," *International Journal of Communication Systems*, vol. 31, no. 14, pp. e3717, Jul. 2018.

[52] **Q.-V. Pham** and W.-J. Hwang, "alpha-Fairness Resource Allocation in Non-Orthogonal Multiple Access Systems," *IET Communications*, vol. 12, no. 2, pp. 179-183, Jan. 2018.

[53] **Q.-V. Pham** and W.-J. Hwang, "Fairness-Aware Spectral and Energy Efficiency in Spectrum-Sharing Wireless Networks," *IEEE Transactions on Vehicular Technology*, vol. 66, no. 11, pp. 10207-10219, Nov. 2017.

[54] **Q.-V. Pham** and W.-J. Hwang, "Network Utility Maximization based Congestion Control over Wireless Networks: A Survey and Potential Directives," *IEEE Communications Surveys and Tutorials*, vol. 19, no. 2, pp. 1173-1200, Second Quarter 2017.

[55] **Q.-V. Pham** and W.-J. Hwang, "Network Utility Maximization in Multipath Lossy Wireless Networks," *International Journal of Communication Systems*, vol. 30. no. 5, pp.1-18, Mar. 2017.

[56] **Q.-V. Pham** and W.-J. Hwang, "Resource Allocation for Heterogeneous Traffic in Complex Communication Networks," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 63, no. 10, pp. 959-963, Oct. 2016.

[57] **Q.-V. Pham**, H. To, and W.-J. Hwang, "A Multi-Timescale Cross-Layer Approach for Wireless Ad Hoc Networks," *Computer Networks*, vol. 18, pp. 471-482, Sep. 2015.

## Domestic Journal Articles

[1] A. Azizan, **Q.-V. Pham**, H. S. Young, K. J. Eon, K. Hoon, P. Junseok, and W.-J. Hwang, "Healthcare System using Pegged Blockchain considering Scalability and Data Privacy," *Journal of Korea Multimedia Society*, vol. 22, no. 5, pp. 613-625, May 2019.

[2] H.-T. Hoang, **Q.-V. Pham**, J. E. Kim, H. Kim, P. Junseok, and W.-J. Hwang, "Unsupervised Outpatients Clustering: A Case Study in Avissawella Base Hospital, Sri Lanka," *Journal of Korea Multimedia Society*, vol. 22, no. 4, pp. 480-490, Apr. 2019.

[3] **Q.-V. Pham**, H. Kim, and W.-J. Hwang, "Globally Optimal Solutions for Cross-Layer Design in Fast-Fading Lossy Delay-Constrained MANETs," *Journal of Korea Multimedia Society*, vol. 18, no. 2, pp. 168-177, Feb. 2015.

## International Conferences

[1] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, D. B. da Costa, and D.-S. Kim, "Automatic Modulation Classification with Low-Cost Attention Network for Impaired OFDM Signals," *IEEE Wireless Communications and Networking Conference (WCNC)*, Austin, TX, USA, Apr. 2022.

[2] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, V.-S. Doan, N. T. Nguyen, D. B. da Costa, and D.-S. Kim, "Densely-Accumulated Convolutional Network for Accurate LPI Radar Waveform Recognition," in *IEEE Global Communications Conference (GLOBECOM)*, Madrid, Spain, Dec. 2021.

[3] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, X.-Q. Pham, and D.-S. Kim, "Deep Learning-based Automatic Modulation Classification for Wireless OFDM Communications," in *International Conference on Information and Communication Technology Convergence (ICTC)*, Jeju, Korea, Oct. 2021.

[4] T. Huynh-The, **Q.-V. Pham**, T.-V. Nguyen, and D.-S. Kim, "Deep Learning for Coexistence Radar-Communication Waveform Recognition," in *International Conference on Information and Communication Technology Convergence (ICTC)*, Jeju, Korea, Oct. 2021.

[5] R. Ruby, H. Yang, **Q.-V. Pham**, and K. Wu, "Delay Performance of UAV-Based Buffer-Aided Relay Networks under Bursty Traffic: Mobile or Static?," in *22nd IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, Pisa, Italy, Jun. 2021.

[6] H. Xu, G. Zhang, J. Zhao, and **Q.-V. Pham**, "Intelligent reflecting surface aided wireless networks: Harris Hawks optimization for beamforming design," in *IEEE 6th International Conference on Computer and Communications (ICCC)*, Sichuan, China, Dec. 2020.

[7] V.-S. Doan, T. Huynh-The, C.-H. Hua, **Q.-V. Pham**, and D.-S. Kim, "Chain-Net: Learning Deep Model for Modulation Classification Under Synthetic Channel Impairment," in *IEEE Global Communications Conference (GLOBECOM)*, Taipei, Taiwan, Dec. 2020.

[8] T. Huynh-The, V.-S. Doan, C.-H. Hua, **Q.-V. Pham**, and D.-S. Kim, "Learning Constellation Map with Deep CNN for Accurate Modulation Recognition," in *IEEE Global Communications Conference (GLOBECOM)*, Taipei, Taiwan, Dec. 2020.

[9] R. Ruby, K. Wu, **Q.-V. Pham**, and B. M. Elhalawany, "Aiding a Disaster Spot via an UAV-Based Mobile AF Relay: Joint Trajectory and Power Optimization," in *ACM International Symposium on Mobility Management and Wireless Access (MobiWac)*, Alicante, Spain, Nov. 2020.

[10] T. Huynh-The, C.-H. Hua, V.-S. Doan, **Q.-V. Pham**, N. T. Van, and D.-S. Kim, "Deep Learning for Constellation-based Modulation Classification under Multipath Fading Channels," in *International Conference on Information and Communication Technology Convergence (ICTC)*, Jeju, Korea, Oct. 2020.

[11] I. Budhiraja, N. Kumar, S. Tyagi, **Q.-V. Pham**, and S. Tanwar, "Energy Efficient Mode Selection Scheme for Wireless Powered D2D Communications with NOMA Underlaying UAV," in *IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, Toronto, Canada, Jul. 2020.

[12] H. Han, J. Zhao, D. Niyato, M. D. Renzo, and **Q.-V. Pham**, "Intelligent Reflecting Surface Aided Network: Power Control for Physical-Layer Broadcasting," in *IEEE International Conference on Communications (ICC)*, Dublin, Ireland, Jun. 2020.

[13] L. N. T. Huynh, **Q.-V. Pham**, T. D. T. Nguyen, M. D. Hossain, J. H. Park, and E.-N. Huh, "A Study on Computation Offloading in MEC Systems using Whale Optimization Algorithm," in *International Conference on Ubiquitous Information Management and Communication*, Taichung, Taiwan, 2020.

[14] I. Nadia, **Q.-V. Pham**, and W.-J. Hwang, Resource Management in NOMA-based Unmanned Aerial Vehicles Wireless Backhaul Networks, in *Korea-Japan Joint Workshop on Complex Communication Sciences (KJCCS2020)*, Hiroshima, Japan, Jan. 2020.

[15] H.-T. Hoang, W.-J. Hwang, and **Q.-V. Pham**, "Improved S-Shaped Transfer Function for Binary Whale Optimization Algorithm," in *The 15th International Conference on Multimedia Information Technology and Applications (MITA2019)*, Ho Chi Minh city, Vietnam, Jul. 2019.

[16] H. N. T. Luan, **Q.-V. Pham**, Q. D. Nguyen, X.-Q. Pham, V. D. Nguyen, and E.-N. Huh, "Energy Efficient Computation Offloading with Multi-MEC Servers in 5G two-tier Heterogeneous Networks," in *International Conference on Ubiquitous Information Management and Communication*, Phuket Thailand, Jan. 2019.

[17] **Q.-V. Pham** and W.-J. Hwang, "Fair and Energy-Efficient Power Control in Spectrum-Sharing Wireless Networks," in *The 12th International Conference on Multimedia Information Technology and Applications (MITA2016)*, Luang Prabang, Laos, Jun. 2016.

[18] **Q.-V. Pham** and W.-J. Hwang, "Outage Constrained Resource Allocation for Energy Efficiency in Coordinated Multicell OFDMA Networks," in *Japan-Korea Joint Workshop on Complex Communication Sciences (JKCCS2016)*, Busan, Korea, Oct. 2016.

[19] **Q.-V. Pham**, M. Hasegawa, and W.-J. Hwang, "An Energy-Efficient Resource Allocation in Ad Hoc Networks," in *Korea-Japan Joint Workshop on Complex Communication Sciences (KJCCS2016)*, Nozawa Onsen, Japan, Jan. 2016.

## Domestic Conferences

[1] T Huynh-The, T.-V. Nguyen, **Q.-V. Pham**, and D.-S. Kim, "An Accurate ConvNet-Empowered Modulation Classification for OFDM Systems," in *Proceedings of Symposium of the Korean Institute of Communications and Information Sciences (KICS)*, Gangneung, Korea, Feb. 2021.

[2] T.-H. Vo, **Q.-V. Pham**, and W.-J. Hwang, "Secrecy-based Task Offloading and Resources Optimization in Mobile Edge Computing System," in *Proceedings of Symposium of the Korean Institute of Communications and Information Sciences (KICS)*, Jeju, Korea, Jun. 2019.

[3] L. N. T. Huynh, **Q.-V. Pham**, T. V. Tai, Tri D.T. Nguyen, VanDung Nguyen, J. H. Park, and E.-N. Huh, "Using PSO Algorithm for Computation Offloading in Multi-Access Edge Computing," in *Proceedings of the Korean Information Science Society Conference*, 20190626, pp. 249-251, Jeju, Korea, Jun. 2019.

[4] H.-D. Lieu, **Q.-V. Pham**, and W.-J. Hwang, "Secure UAV Communications with Non-Orthogonal Multiple Access," in *Spring Conference of the Korean Multimedia Society (KMMS)*, Pohang, Korea, May 2019.

[5] M. Le, **Q.-V. Pham**, and W.-J. Hwang, "Resource Allocation in NOMA-based D2D Communications with Both Licensed and Unlicensed Bands," in *Spring Conference of the Korean Multimedia Society (KMMS)*, Pohang, Korea, May 2019.

[6] A. A. B. M. Zin, **Q.-V. Pham**, and W.-J. Hwang, "Blockchain Approach on Enhancing User Data Privacy in Healthcare IoT Network," in *Fall Conference of the Korean Multimedia Society (KMMS)*, vol. 21, no. 2, Nov. 2018.

[7] G. G. Girmay, **Q.-V. Pham**, and W.-J. Hwang, "Joint channel and Power allocation for Device-to-Device communication on Licensed and Unlicensed band," in *Fall Conference of the Korean Multimedia Society (KMMS)*, vol. 21, no. 2, Nov. 2018.

[8] **Q.-V. Pham** and C. S. Hong, "Power Control for Harmonic Utility in Non-Orthogonal Multiple Access based Visible Light Communications," in *Proceedings of the Korean Information Science Society Conference*, Busan, Korea, Dec. 2017.

[9] **Q.-V. Pham** and W.-J. Hwang, "Distributed Power Control for Interference Management in Uplink Heterogeneous Networks," in *Spring Conference of the Korean Multimedia Society (KMMS)*, vol. 20, no. 1, May 2017.

[10] **Q.-V. Pham**, A. Radwan, and W.-J. Hwang, "Optimal Resource Allocation for Energy Efficiency in Uplink Heterogeneous Networks," in *Fall Conference of the Korean Multimedia Society (KMMS)*, vol. 18, no. 2, Nov. 2015.

[11] **Q.-V. Pham**, A. Radwan, and W. J. Hwang, "Hop-by-Hop Rate Control in Multipath Lossy Wireless Networks," in *Spring Conference of the Korean Multimedia Society (KMMS)*, vol. 18, no. 1, May 2015.

[12] **Q.-V. Pham** and W.-J. Hwang, "A Novel Cross-Layer Design for Fast-Fading Multihop Wireless Networks," in *Fall Conference of the Korean Multimedia Society (KMMS)*, vol. 17, no. 2, Nov. 2014.

[13] **Q.-V. Pham** and W.-J. Hwang, "A Novel Handover Algorithm in LTE Small Cell Networks," in *Spring Conference of the Korean Multimedia Society (KMMS)*, vol. 17, no. 1, May 2014.

[14] **Q.-V. Pham** and W.-J. Hwang, "Joint Inter-cell Interference Management and Mobility-aware Prediction in LTE Femtocell Networks," in *Fall Conference of the Korean Multimedia Society (KMMS)*, vol. 16, no. 2, Nov. 2013.

## Languages

| | |
|---|---|
| Vietnamese: | Mother-tongue |
| English: | Fluent |
| Korean: | Basic Knowledge |

## Referees

**Prof. Won-Joo Hwang, Ph.D.**
Department of Biomedical Convergence Engineering, Pusan National University
49, Busandaehak-ro, Mulgeum-eup, Yangsan-si, Gyeongsangnam-do 50612, Republic of Korea
Phone: +82-51-510-8587
E-mail: wjhwang@pusan.ac.kr
Homepage: https://wireless-ai.github.io

**Prof. Long Bao Le, Ph.D.**
Institut National de la Recherche Scientifique, University of Quebec
Montreal, QC H5A 1K6, Canada
Phone: +1-514 228-7015
E-mail: long.le@emt.inrs.ca
Homepage: http://necphy-lab.com/

**Prof. Zhiguo Ding, Ph.D., IEEE Fellow**
School of Electrical and Electronic Engineering, The University of Manchester
Manchester, M13 9PL, UK
Phone: +44 (0)1613064779
E-mail: zhiguo.ding@manchester.ac.uk
Homepage: https://personalpages.manchester.ac.uk/staff/zhiguo.ding/index

**Prof. Zhu Han, Ph.D., IEEE Fellow, AAAS Fellow**
Department of Electrical and Computer Engineering, University of Houston
W302, Engineering Building 2, University of Houston, Houston, TX 77004, USA
Phone: +1 713-743-4437
E-mail: zhan2@uh.edu
Homepage: http://www2.egr.uh.edu/~zhan2/